

REMARKS/ARGUMENTS

Reconsideration of this application and entry of the foregoing amendments are respectfully requested.

The claims have been revised to define the invention with additional clarity. Support for the revision of claim 1 to further clarify that it is annatto-containing whey that is whitened can be found, for example, at page 4, lines 24-27. That the claims have been revised should not be taken as an indication that Applicants agree with any position taken by the Examiner. Rather, the revisions have been made merely to advance prosecution.

Claims 1-3, 5-9, 11, 12 and 15 stand rejected under 35 USC 112, first paragraph, as allegedly lacking written description. Withdrawal of the rejection is submitted to be in order in view of the above-noted amendment of claim 1 and further in view of the comments that follow.

As pointed out above, claim 1, from which claims 2, 3, 5-9, 11 and 12 depend, has been revised to more clearly indicate that it is annatto-containing whey that is whitened. Claim 15, like claim 1 as now presented, refers to whitening of annatto-containing whey.

In rejecting the claims as lacking written description, the Examiner states:

Applicants have not set forth or cited any examples of any enzymatic bleaching with respect to annatto or annatto containing products in the disclosure.

Respectfully, it is now well settled that examples are not required to satisfy the written description requirement of 35 USC 112, first paragraph. What is required is that the specification describe the claimed subject matter in such a way as to reasonably convey to one skilled in the relevant art that the applicant had possession of the invention at the time the application was filed. That is clearly the case here.

Specifically, the disclosure at page 2, lines 4-10 makes it clear that the invention relates to a food product production process that comprises contacting a pigment present in an intermediate form of that food product with an enzyme that converts the pigment into a form that results in increased whiteness. The application includes a description of a wide variety of pigments, food product intermediates and suitable enzymes at, for example, pages 2-5. Of particular relevance to the present claims is the disclosure at page 4, lines 24-27. There, specific reference is made to the whitening of annatto-containing whey.

While nothing more should be required, Applicants submit herewith a Declaration under Rule 132 wherein the Declarant (Peter Langeveld) reports the results of experiments in which annatto-containing whey is contacted with an enzyme (MaxiBright™) for which annatto is a substrate. As will be clear from the results presented, treatment with the enzyme resulted in whitening of the whey.

The Examiner is urged to give careful consideration to the foregoing comments and attached Declaration. It is believed that, having done so, the Examiner will find withdrawal of the rejection to be in order and the same is requested.

Claims 1-3, 5-9, 11, 12 and 15 stand rejected under 35 USC 103 as allegedly being obvious over Brody et al in view of Zorn et al and further in view of US Dairy Export Council, Davisco Foods International and FASonline. Withdrawal the rejection is in order for the reasons that follow.

Brody et al relates to a process for removing one or more color constituents from a dairy material, such as whey. Reference is made to annatto extract as a coloring agent. In column 11, lines 11- 13, it is indicated that any suitable bleaching material can be used. However, Brody et al describes only chemical modification techniques using chemical agents or energy sources, and

techniques that physically remove the coloring agent (see column 12, lines 19- 37 of Brody et al). There is absolutely no suggestion of the use of an enzyme-based technique.

In addition to the lack of any specific reference to the use of an enzyme to reduce color, Brody et al also teaches that the bleaching is conducted under heating. In this regard, attention is directed to, for example, column 9, lines 25- 30 and lines 39-45. In the Examples of Brody et al, temperatures used include:

- 135 °F, i.e., approximately 57.2 °C (Example 1- Part E)
- 140 °F, i.e., approximately 60 °C (Table III)
- 130 °F, i.e., approximately 54.4 °C (Table III)
- 135 °F, i.e., approximately 57.2 °C (Table III)
- 140 °F, i.e., approximately 60 °C (Example 29- Part C)

Thus, not only does Brody et al not suggest using enzymes as a bleaching agent, the relatively high temperature conditions specifically described would have taught away from an enzyme-based approach. That is, one skilled in the art would have appreciated that such temperatures are not typically appropriate for use in enzyme-based reactions. This is certainly true for the bleaching enzyme of *Marasmius scorodoni*. Zorn et al, cited by the Examiner, provides in Figure 3 the temperature optimum and shows that the enzyme is only marginally active, at best, at temperatures above 34 °C. That is, the *Marasmius scorodoni* enzyme would simply not work at the temperatures used in Brody et al.

The Examiner relies on Zorn et al to cure certain of the failings of Brody et al. However, that reliance is not well founded. Zorn et al describes the effect of fungal-based enzymes on beta, beta-carotene, not on any carotenoid. The Examiner appears to take the position that the *Marasmius scorodoni* enzyme would have been expected to cleave all carotenoids, including

annatto. Respectfully, this position can only be based on improper hindsight-based reasoning. Certainly nothing in Zorn et al would have suggested that a non-ring containing structure, such as that of annatto, would serve as a substrate for this enzyme (the Examiner is referred to the response filed May 18, 2011, where the structures of beta, beta-carotene and annatto are provided).

According to generally available databases, such as Wikipedia, there are more than 85 different carotenoids which are divided into 14 different subgroups. Beta, beta-carotene and annatto are in different groups. Given the fundamental differences between beta, beta-carotene and annatto, no reasonable basis would have existed for expecting that annatto could serve as a substrate for an enzyme shown by Zorn et al to cleave beta, beta-carotene. It is only with hindsight that one could contend otherwise.

Nothing in the further documents upon which the Examiner relies would have cured the fundamental failings of Brody et al and Zorn et al. Accordingly, reconsideration and withdrawal of the rejection are requested.

MUTSAERS et al
Appl. No. 10/584,921
October 31, 2011

This application is submitted to be in condition for allowance and a Notice to that effect is requested. Should the Examiner find any issue to remain outstanding, the Examiner is requested to contact the undersigned by phone prior to issuing any further Action so that every effort can be made to resolve same.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: Mary J. Wilson
Mary J. Wilson
Reg. No. 32,955

MJW:tat
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100